

CLAIMS

1. A tool exchange device comprising:

step portions (5a, 5b) with an L-shaped section having vertical
5 restriction surfaces (6) diametrically opposing and parallel to each
other and horizontal engagement surfaces (7) directed radially
outwardly from the lower ends on both sides of a main body portion (2)
of a tool (1); a first engagement member (13) provided on one side of
a holding portion (11) that places and holds a tool (1) for exchange,
10 the first engagement member (13) having a first engagement projection
piece (12) opposing the engagement surface (7) of one (5a) of the step
portions and having its end surface (12a) in abutment against the
restriction surface (6); a second engagement member (15) provided on
the other side of the holding portion (11), the second engagement member
15 (15) having a second engagement projection piece (14) having its
intermediate part opposed to the engagement surface (7) of the other
(5b) of the step portions, and having its end surfaces (14a) on both
sides in abutment against the outer periphery of the main body portion
(2) on the both sides of the step portion (5b); and moving unit which
20 moves the first and second engagement members (13, 15) between an
engagement position and a withdrawal position with respect to the step
portions (5a, 5b).

2. The tool exchange device according to claim 1, wherein the
25 moving unit includes: a moving guide (21a, 21b, 22a, 22b) that movably

supports the first and second engagement members (13, 15) between the engagement position and the withdrawal position; energizing unit (24, 26) for energizing the first and second engagement members (13, 15) to move toward the engagement position; wedge members (29) engageable
5 with engagement rollers (27a, 27b) provided at the first and second engagement members (13, 15); and moving unit (31) for the wedge members (29), and wherein the energizing force by the energizing means (24) for the first engagement member (13) is set greater than the energizing force by the energizing unit (26) for the second engagement member (15).

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3. A tool (1) comprising: a grip portion (3) to be gripped by a head (H) at the top of a main body portion (2) with an approximately circular shape in a plan view; and an operation portion (4) underneath, wherein notches (8a, 8b) having step portions (5a, 5b) with an L-shaped
15 section are provided at both sides of the main body portion (2), the step portions (5a, 5b) include vertical restriction surfaces (6) diametrically opposing and parallel to each other, and horizontal engagement surfaces (7) directed radially outwardly are provided at the lower ends of the vertical restriction surfaces (6).

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